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Liquidity and Hedge Funds

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Summary

Mission of the BNP Paribas Hedge Fund Centres

The mission of the BNP Paribas Hedge Fund Centres is to facilitate, encourage, and sponsor high-level academic research on hedge funds. The Centres also provide outstanding education to students, executives, and investors, and publish objective and independent information on hedge funds, while promoting understanding and awareness of alternative investment strategies. Through excellence in research on alternative investments, the Centres are recognized for their capacity to foster stimulating exchange of opinions, and to develop a knowledgeable and objective information base regarding hedge funds.

The primary objectives of the BNP Paribas Hedge Fund Centre at the Singapore Management University are to

1. conduct and disseminate high quality academic hedge fund research
2. educate finance practitioners and the investor public on hedge funds, and
3. raise the profile of the hedge fund industry in Asia and Singapore

To achieve these goals, the Centre will collaborate closely with its sister centres at the London Business School and HEC. Moreover at all times, the Centre is absolutely committed to the highest ethical conduct and will actively avoid any conflicts of interest with outside parties.

Liquidity and Hedge Funds

Melvyn Teo[1]

Abstract

Market liquidity profoundly impacts hedge funds. Funds trading illiquid securities earn a significant risk premium, report smoother returns, can better leverage on information asymmetries, and grapple with stronger capacity constraints. Importantly, the funding liquidity of hedge funds, or their ease of obtaining financing, can have a significant effect on the market liquidity of the securities they trade in, creating a downward liquidity spiral during economic downturns. We review the academic literature and deliver insights that resonate with recent market events.

Introduction

Recent market events have cast the spotlight on liquidity. What started out as a correction in the subprime lending markets in 2007 led to the sale of Bear Stearns, the collapse of Lehman Brothers, and the near bankruptcy of American International Group. Almost overnight, liquidity evaporated from the markets, and volatility reigned on Wall Street. Hedge funds were caught in the ensuing flight to quality. Many hedge funds, across various investment strategies, posted dismal returns and some like Citadel were forced to erect gates to stanch the massive tide of investor redemptions. What is the relationship between hedge funds and liquidity? Why does liquidity dry up so quickly, affect different markets simultaneously, and relate closely to volatility? To shed light on these issues, we turn our attention to academic research on liquidity and hedge funds.

1. Illiquidity Risk Premium

Hedge funds that invest in illiquid stocks earn a sizeable illiquidity risk premium for doing so. Aragon (2007) finds that the excess return of funds with lockup provisions are approximately 4-7 percent per year higher than those of non-lockup funds. Further, the average alpha of all funds after controlling for lockups and other share restrictions is negative or zero. Aragon (2007) shows also that hedge funds which employ lockup restrictions trade more in illiquid securities. He argues that share restrictions allow funds to efficiently manage illiquid assets, and these benefits are captured by investors in the form of a share illiquidity premium. In sum, according to Aragon's work, many hedge funds, especially those with lockups and share restrictions, outperform by buying illiquid securities and short-selling liquid securities. Naturally such funds

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are also susceptible to liquidity shocks like the 1998 Russian ruble default and the 2008 Lehman Brothers collapse.

2. Market Liquidity and Serial Correlation

Illiquidity exposure induces smoothness in reported hedge fund returns. The basic idea is that hedge funds often invest in illiquid securities that are not actively traded and for which market prices are not readily available. Getmansky, Lo, and Makarov (2004) show that as a result of hedge fund illiquidity exposure, hedge fund reported returns will tend to be smoother than true economic returns, which will understate volatility and inflate risk-adjusted performance measures like the Sharpe ratio. Consistent with an illiquidity exposure explanation for serial correlation, Getmansky, Lo, and Makarov (2004) find that funds with the highest serial correlation tend to be the most illiquid funds, i.e., emerging market debt, fixed income, etc.

The serial correlation in returns may arise from linear extrapolation of prices for thinly traded securities, the use of smoothed broker dealer quotes, or in, some cases, deliberate performance-smoothing behavior. Regardless of the mechanism by which hedge fund returns are smoothed, Getmansky, Lo, and Makarov (2004) argue that illiquidity exposure, and not managerial skill, explains hedge fund return persistence over monthly/quarterly horizons. To the extent that hedge fund investors rely exclusively on performance measures like the information ratio to evaluate managers, the performance of hedge funds investing in illiquid securities will appear better than they truly are.

3. Market Liquidity and Capacity Constraints

Liquidity impacts hedge funds in other ways. Teo (2009a) finds that small hedge funds outperform large hedge funds by 3.88 percent per year after adjusting for risk. He traces these capacity constraints to liquidity and price impact. Controlling for investment strategy, large hedge funds have significantly greater liquidity demands than do small hedge funds. Consistent with this argument, the performance differential between small and large funds is especially strong for funds with long redemption notice periods and low redemption frequencies.

It is also revealing that small funds outperform large funds most when market-wide liquidity is low. After adjusting for risk, the spread between small and large funds is 7.13 percent per year for months when market-wide liquidity lies below its 20th percentile and is only 3.57 percent per year for months when market-wide liquidity rises above its 80th percentile. In August of 1998, when Russia defaulted on the Ruble and triggered a global liquidity crunch that ultimately lead to the demise of Long-Term Capital Management, the abnormal return of the spread between small and large funds was an annualized 28.43 percent.

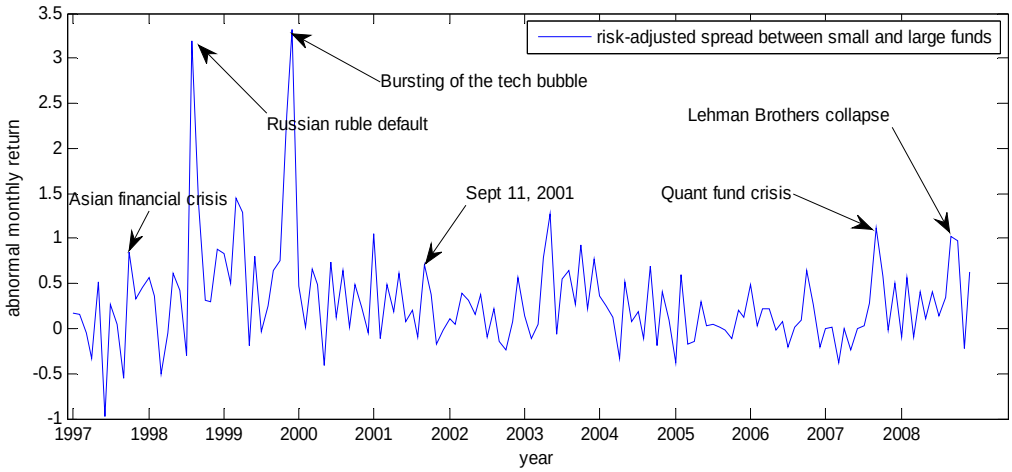

Figure 1: Time variation in hedge fund capacity constraints
Reproduced from Teo (2009a)

As illustrated in Figure 1 above, the small versus large fund spread is also exceptionally high in October 1997, at the height of the Asian financial crisis, in September 2001, when terrorists struck the World Trade Center Twin Towers, and in September 2008, when Lehman Brothers collapsed. Therefore, capacity constraints may be one factor driving the lower than expected returns of large and hitherto successful funds like Citadel, Och-Ziff, Highbridge Capital, GLG Partners, and Tudor Investment Group in 2008.[2]

4. Market Liquidity and Information Asymmetry

Illiquidity exposure amplifies the advantage of local information. Teo (2009b) documents local information asymmetries with hedge funds. Funds that are located near their investment markets tend to earn higher returns than do funds that are located far away from their markets. For equity long/short funds investing in Asia, he finds that nearby funds with local headquarters or local research offices outperform distant funds by 3.72 percent per year. He also finds that the effects of geography are strongest for funds investing in illiquid stocks. Because illiquid stocks are thinly traded, there is less price revelation. Moreover, many illiquid stocks are small stocks with little analyst coverage. Hence, local information is likely to be more important when selecting illiquid stocks. Conversely, the advantage of being on the ground for hedge funds trading liquid stocks with an abundance of readily available public information is not as large.

5. Funding Liquidity and Liquidity Spirals

Thus far, the discussion has centered on how market liquidity impacts hedge funds. However, under certain circumstances, the liquidity of the hedge fund's underlying investors and financiers can affect the market that the hedge fund trades in. For example, Mitchell, Pedersen, and

[2] See "Crisis on Wall Street: more pain, less gain for large hedge funds," The Wall Street Journal, 26 September 2008.

Pulvino (2007) find that capital shocks to convertible arbitrage hedge funds, who are the main liquidity providers in the convertible bond markets, caused prices of convertible bonds to experience a liquidity-driven diversion from fundamentals.

Building on this, Brunnermeier and Pedersen (2009) provide a theoretical model that makes the distinction between an asset's market liquidity (the ease with which it is traded) and trader's funding liquidity (the ease with which they can obtain financing). On one hand, traders provide market liquidity and their ability to do so depends on their availability of funding. When funding liquidity is tight, traders become reluctant to take on positions, especially capital intensive positions in high margin securities. This lowers market liquidity leading to higher volatility. On the other hand, trader's funding, i.e., their capital and margin requirements, depends on the asset's market liquidity. Under certain conditions, low future market liquidity increases risk of financing a trade, thus increasing margins.

They argue that margins can increase in illiquidity when margin setting financiers are unsure of whether price changes are due to fundamental news or to liquidity shocks. For instance, the margins for the S&P 500 futures increased during the liquidity shocks of 1987, 1990, 1998, and 2007. Further as shown in the Figure 2 below, when markets are illiquid, market liquidity is highly sensitive to changes in funding liquidity due to two liquidity spirals.

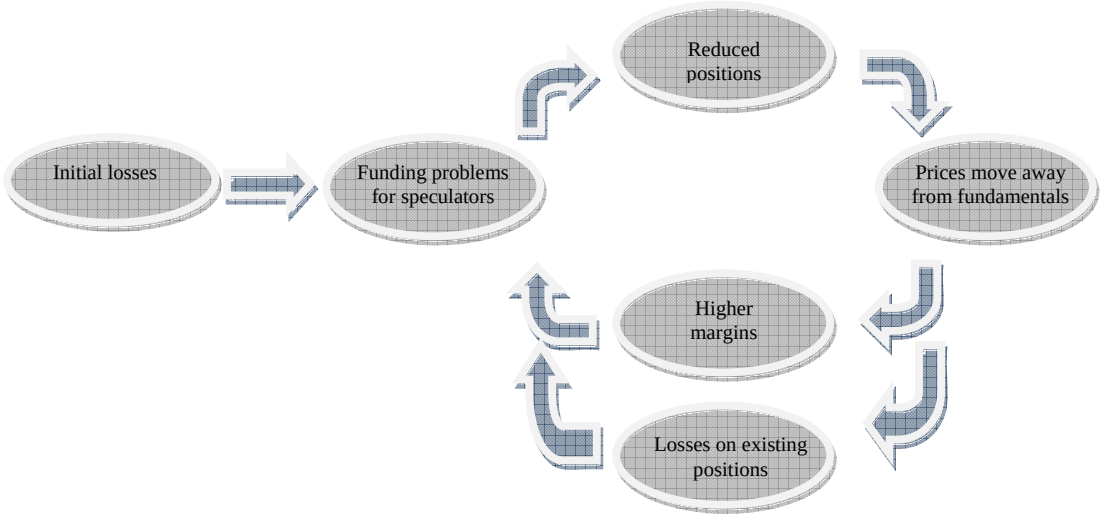

Figure 2: Liquidity spirals
Reproduced from Brunnermeier and Pedersen (2009)

First, a margin spiral emerges if margins are increasing in illiquidity. In this case, a funding shock to hedge funds or other speculators lowers market liquidity and leads to higher margins, which tightens speculators' liquidity further and so on. For example, the subprime crisis of 2007 precipitated margin increases at the end of August 2007 and at the end of November 2007 for the Chicago Mercantile Exchange S&P 500 futures contract. The margin spiral forces traders to de-lever during downturns.

Second, a loss spiral arises if hedge fund investors react to hedge fund portfolio losses by pulling out their funds. In this case, a funding shock increases market illiquidity which leads to more speculator losses on their initial positions, forcing them to sell more in anticipation of redemptions from their clients, and causing a further price drop and so on. These liquidity spirals reinforce each other creating a total effect that is greater than their sum.

Brunnermeier and Pedersen (2009) go on to show that their model can explain why market liquidity can (i) suddenly dry up, (ii) has commonalities across different securities, and (iii) is related to volatility. According to their model, the effects of speculator capital on market liquidity are highly non-linear. A marginal change in capital has a small effect when speculators are far from their constraints, but a large effect when speculators are close to their constraints, implying that liquidity can suddenly dry up. Further, since speculators, e.g., multi-strategy hedge funds, hold different securities at the same time, funding liquidity shocks via these speculators can drive commonality in liquidity across different markets. Finally, trading more volatile assets requires higher margins and greater capital. As a result, volatility is negatively correlated with market liquidity. These findings on liquidity nicely resonate with the market events sparked by the recent subprime financial crisis.

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Update on the Centre's Activities

Education

Mr Tan Chin Hwee, partner-in-charge of Apollo Management's capital market business in Asia gave a seminar on "Forensic Accounting in Asia" on 27 March 2009. Apollo Management is an investment management firm, founded by Leon Black, with US$45 billion under management. The seminar was jointly organized with CFA Singapore, and was very well-received. We had a total turnout of 82 participants.

Chin Hwee thrilled the audience with interesting stories based on his experiences investing in Chinese and Indian companies. According to him, it was important to understand corporate governance risks when investing in emerging markets. For example, some companies like Satyam Computer Services and FibreChem claim to have a lot of cash on their balance sheets and yet continue to aggressively raise capital. Often, this is a sign of corporate malfeasance.

Research

The centre director, Melvyn Teo, has revised his paper "Hedge fund capacity constraints, liquidity, and hierarchy costs" to include timely results linking capacity constraints to fluctuations in market-wide liquidity.

For more information regarding the BNP Paribas Hedge Fund Centre at SMU and our upcoming activities, please contact Ms Karyn Tai, centre coordinator (Tel: +65-6828-0933, E-mail: hfc@smu.edu.sg) or visit our webpage at http://www.smu.edu.sg/centres/hfc/index.asp We look forward to receiving your suggestions and comments.